National Climatic Data Center

DATA DOCUMENTATION

FOR

DATA SET 3260 (DSI-3260)

15 Minute Precipitation Data

March 19, 2003

National Climatic Data Center
151 Patton Ave.
Asheville, NC 28801-5001 USA

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1. Abstract: Fifteen minute precipitation data is available for over 2,000 stations located across the United States, Puerto Rico, the Virgin Islands and the United States protectorates in the Pacific. This digital file began in May of 1971 as the TD-9927 file, and continued through December 1983 when it was then merged into DS-3260. Data are archived in a variable length element file structure. Archived data are currently sorted by Station-ID (excluding the Division Number) as the primary key and year, month, and day as secondary keys. It must be noted that NCDC has the observations from the time the station opened, but the NWS has the current data. Official surface weather observation standards can be found in the Federal Meteorological Handbook.

Each logical record contains one day of one station's 15-minute data values for a specific meteorological element. The record consists of a control word and identification portion, and a data portion. The control word is used for record length determination. The identification portion identifies the observing station, year and record element code. The data portion contains the meteorological observation for the 15-minute precipitation value and flags. The data portion is repeated for as many values as occur in the given time interval.

For most periods the non-occurrence of precipitation is prevalent. Therefore in order to save space in the digital file there are entries only for:

1. The first 15-minute period of the first day of each month where observations were taken even if no precipitation occurred during that month.

2. 15-minute periods with precipitation greater than zero.

3. Beginning and ending 15-minute periods of missing data.

4. Beginning and ending periods of accumulated precipitation.

5. Beginning and ending periods of deleted data.

6. The first and last day of each month where the required charts or forms never were received or processed at NCDC.

This data file was unique when compared to the other NCDC Element Files. No corrected or edited data are available in this data file for the pre-January 1996 data. The data were classified as original data. Beginning with the January 1996 data, however, both the gauge data from the Fischer-Porter gauges and the gauge data refined into actual value amounts are available.

2. Element Names and Definitions:

FIELD	RECORD POSITION	ELEMENT NAME	CODE DEFINITIONS AND REMARKS
001	1-3	Record-Type	The type of data stored in this record. Value is "15M".

002	4-11	Station-ID	This 8-character station identifier is assigned by the National Climatic Data Center. See State Code Table.
	4-5	State-Code	STATE CODE as indicated. Range of value is 01 to 48, 50, 51, 66, 67, and 91.

STATE CODE TABLE

01 Alabama	28 New Jersey
02 Arizona	29 New Mexico
03 Arkansas	30 New York
04 California	31 North Carolina
05 Colorado	32 North Dakota
06 Connecticut	33 Ohio
07 Delaware	34 Oklahoma
08 Florida	35 Oregon
09 Georgia	36 Pennsylvania
10 Idaho	37 Rhode Island
11 Illinois	38 South Carolina
12 Indiana	39 South Dakota
13 Iowa	40 Tennessee
14 Kansas	41 Texas
15 Kentucky	42 Utah
16 Louisiana	43 Vermont
17 Maine	44 Virginia
18 Maryland	45 Washington
19 Massachusetts	46 West Virginia
20 Michigan	47 Wisconsin
21 Minnesota	48 Wyoming
22 Mississippi	49 Not Used
23 Missouri	50 Alaska
24 Montana	
25 Nebraska	51 Hawaii
26 Nevada	66 Puerto Rico
27 New Hampshire	67 Virgin Islands
91 Pacific Islands	

	6-9	Cooperative Network Index	Cooperative Network Index Number assigned by NCDC. (Station List) Range 0001 through 9999.
002 (cont)	10-11	Cooperative Network Division	Cooperative Network Division Number The division number was 00 in this 15M data set until September 1993. The current Cooperative Network Division Number (01 - 10) is recorded in this element, beginning in October 1993.
003	12-15	Element-Type	The type of data element stored in this record. Range of values is listed below. (Includes the daily total)

		QPCP	15-minute precipitation data. Prior to January 1996 "QPCP" was the only element in this data set. (Includes the daily total)
		QGAG	This element type was added with the January 1996 data. "QGAG" indicates that quarter-hour Fischer/Porter gage values and the Daily total are stored.
004	16-17	Element-Units	The units and decimal position of the data value for this record. Range of values is listed below.
		HI	Hundredths of inches. Data stored and observed to the same accuracy.
		HT	Tenths of inches. Data stored to tenths only.
005	18-21	Year	This is the year of record. Range of values is generally 1971 through current year processed. (A few stations begin earlier.)
006	22-23	Month	Month of record. Range of values = 01-12.
007	24-27	Day	Day of record. Range of values = 01-31. Days are right justified zero filled.
008	28-30	Number-Reported Values	This denotes the actual number of values. Tape Fields 009-012 012 are repeated by the number of reported values in Tape Field 008. Range of values is 002 to 100.

NOTE: A record may contain fewer or more data values than you might expect. A daily record of 15 minute values may contain as few as 2 data values or as many as 97 data values. Only 15 minute time periods which have recorded precipitation are included (no entry for zero precipitation). There are some exceptions: 1) the begin and end 15 minutes of a missing, accumulation or deleted period are reported, 2) the first day and 15 minute of each month that a site is in operation, whether precipitation occurs or not is included. See Flag 1 definitions for further details. If a particular data value was not taken or is unavailable, there is no entry for it.

009	31-34	Time-Of-Value	This contains the ending time of the precipitation in hours and minutes 0015 - 2500. (Example, 15 minute period 0345 is defined as 0331 - 0345.) Midnight = 2400. Hour 2500 will indicate the daily total, and it will be the last value. Hour is in the 2 left digits, and minutes are in the 2 right digits. Local Standard Time in use.
010	35-40	Data-Value	The actual 15-minute precipitation data value. The data value portion is the five-digit integer with a leading algebraic sign. The sign is blank to indicate positive and the □-□ to indicate negative is never used in this data set data-value portion is a six-digit integer. Units and decimal position, if appropriate, are indicated in the Element-Units field described in Tape Field 004. Range = 000000-099999. 000000 will be used only on the first day 15 minute time period of each month unless there is precipitation, a begin missing, a begin delete or a begin accumulation all of which would be noted or the measured value provided. On other days during the month with no precipitation, no entry will be made. 099999 indicates that the data-value is unknown.
011	41	Flag1 - The Data Measurement Flag. **FLAG1 Table (Data Measurement Flag)** a Begin accumulation. A value of 99999 accompanies this	

flag. For TD3260, it indicates that the accumulation has begun sometime during the 15 minute period.

A — End accumulation (amount is associated with this flag). For TD3260, it indicates the accumulation has ended sometime during the 15 minute period. Accumulated period indicates that the precipitation amount is correct, but only the inexact beginning and ending times are known. A data value of 99999 occurring on the last day and hour of a month indicates the accumulation continues into the next month (see Flag 1 ",")

, — The "," flag is used at the beginning of a data month when an accumulation is in progress from the previous month. A data value of 99999 always accompanies this flag. This flag is used prior to 1984.

{ — Begin deleted period during the 15 minute period (inclusive). The original data were received, but were unreadable or clearly recognized as noise. A value of 99999 accompanies this flag. Primarily used since 1984. Also used in Alaska for 1976-1978.

} — End deleted period during the 15 minute period (inclusive). The original data were received, but were unreadable or clearly recognized as noise. A value of 99999 accompanies this flag. Primarily used since 1984. Also used in Alaska for 1976-1978.

[— Begin missing period during the 15 minute period (inclusive). A value of 99999 accompanies this flag.

] — End missing period during the 15 minute period (inclusive). A value of 99999 accompanies this flag. Prior to 1984, if precipitation occurred during the last 15 minutes of the missing period, the ending missing value appears with a non-zero value (example 00021]). Beginning in 1984, the beginning and ending 15 minute period of the missing period are recorded as 99999[and □99999], respectively. A missing flag indicates that the data were not received. This flag appears on the first and last day of each month for which data were not received or not processed by NCDC.

E — Evaporation may have occurred. Data may or may not be reliable. This flag was used during the period 1984-1993.

g — Only used for day 1, hour 0015 when precipitation is zero.

b — (blank) no Flag needed.

I — Incomplete or Inexact daily total occurring only with hour 2500. Value is not a true 24-hour amount. One or more periods are missing and/or an accumulated amount

has begun but not ended during the daily period.

P — A daily total excludes erroneous values (those flagged q, Q, {, or }. A "P" flag will also be present when an accumulation has ended (but not begun) during the daily period.

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012 42 FLAG2 The Data Quality Flag.

FLAG2 Table (Data Quality Flag)

X — Used for data prior to 1996 as part of a 1997 data rehabilitation effort. Indicates value failed an extreme value test; data are to be used with caution. Extremes tests were: 1) If the value was not an accumulated precipitation total, the value failed the one-hour statewide 100 year return period precipitation. 2) If the value was an accumulated precipitation total, the value failed the 24-hour statewide extreme precipitation total.

Z — Used since January 1996. Indicates probable amounts as a result of melting frozen precipitation. When assigned to a daily total, it indicates some or all of the total contains values assigned a flag of Z. This flag may be used to identify those sites that are deficient in which the manner the snow shields are employed.

R — Used since January 1996. Indicates data values are suspect with regard to the times or period of occurrence. When assigned to a daily total, it indicates data with suspect "times" are included in the daily amount.

Q — Used since January 1996. A single erroneous datum (value will be present.) Lowest data resolution is hourly. This data value is excluded from the daily total.

q — Used since January 1996. An hourly value excludes one or more 15 minute periods. Lowest data resolution is 15 minutes.

A — Accumulated period and amount. An accumulated period indicates that the precipitation amount is correct, but the exact beginning and ending times are only known to the extent that the precipitation occurred sometime within the accumulation period. The begin accumulation period 'data value' in Tape Field 010 will always be 099999. The examples below do not represent the actual data format. They are used to illustrate the use of data measurement FLAG1.

Example 1: 01 0015099999Ab 01 2500 099999Ib 02

1345000080Ab 02 2500 000080Ib. (Precipitation on the 1st day of month began accumulating at 0015 hours. At 2500 hours (daily total) was listed as incomplete (I). On day 02, the accumulation period ended at 1345 hours at which .80 inch of precipitation was measured. The daily total on day 02 was listed as incomplete due to the accumulation period from day 01 to day 02.)

Example 2: 01 0630099999Ab 01 221500140Ab. Accumulation of 1.40 inches of precipitation was recorded from 0630 hours to 2215 hours on day 01.

D Deleted Flag. (Beginning and ending of a deleted period.) A deleted value indicates that the original data were received, but were unreadable or clearly recognized as noise.

NOTICE: The data prior to January 1996 will have a blank followed by 99999D to indicate a deleted time period. The data from January 1996 to current will have a delete denoted by 099999D.

I Incomplete Flag. This flag occurs only in the daily total.

M Missing Flag. (Beginning and ending of a missing period.) A missing flag indicates that the original data were never received for a given period.

B (blank) No Flag needed.

!!!!!!!!!!!!!!!!!!! N O T I C E !!!!!!!!!!!!!!!!!!!

EFFECTIVE WITH THE JANUARY 1996 DATA, THE FLAG1 ELEMENT(ABOVE) IS DEFINED AS FOLLOWS:

FLG1	a	Begin accumulation. A value of 99999 accompanies this flag.
FLG1	A	End accumulation (amount is associated with this flag).
FLG1	,	The "," flag is used at the beginning of a data month when an accumulation is in progress. This enables a data month to be examined as a singularly context consistent entity. (suggested by the National Weather Service, Office of Hydrology). The post 1983 processing system does not provide for accumulations to span data months. The □,□ flag is intended to correct erroneous flag sequences in the historical data.
FLG1	[	Begin missing period during the hour (inclusive)
FLG1	]	End missing period during the hour (inclusive)

note... [ ] replace the present paired M context dependent flags.

FLG1	{	Begin deleted period during the hour (inclusive).
FLG1	}	End deleted period during the hour (inclusive)

note... { } replace the present paired D context dependent flags.

note... the] and the [and the } and the { will be placed on monthly boundaries when the period covered crosses a monthly boundary. In this way, a given months data will "stand on its own two feet".

FLG1	g	Accompanies the Zero "day one" value.
FLG1	T	Indicates a "trace" amount. Data value will be zero. "T" flags appear on NWS First Order data only.
FLG1	I	Incomplete data. Daily totals only.

NOTE: These new symbols were not introduced in the HPD publication until the January 1997 data month.

GAGE data flags.

Beginning January 1996, DSI-3260 contains the archive of the original gage translation data. These data are in units of gage weight. The element is QGAG (counterpart of QPCP). The measurement flags are:

	FLAG1 (measurement)
a	begin accumulation (indicates measurement periods from one tape to the next have overlapped)
A	End accumulation.
[	Begin Missing
]	End Missing
{	Begin Delete
]	End Delete
S	gage reset
N	New tape

NOTA BENE: The gage reading antecedent to a missing or deleted time period can be very different from the gage reading subsequent to a missing or deleted time period.

012	42	Flag2	This flag not used at this time. The field will always be blank.

!!!!!!!!!!!!!!!!!!!!N O T I C E !!!!!!!!!!!!!!!!!!!!

EFFECTIVE WITH THE JANUARY 1996 DATA, THE FLAG2 ELEMENT(ABOVE) IS DEFINED AS

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FOLLOWS:

FLG2	Z	Indicates probable amounts as a result of melting frozen precipitation. When assigned to a daily total, it indicates some or all of the total contains values assigned a flag of Z. This flag may be used to identify those sites that are deficient in which the manner the snow shields are employed.
FLG2	R	Indicates data values are suspect with regard to the times or period of occurrence. When assigned to a daily total, it indicates data with suspect "times" are included in the daily amount.
FLG1	B	A single missing datum.
FLG2	Q	A single erroneous datum (value will be present).
FLG2	P	A daily total excludes erroneous value(s) (flagged Q).

GAGE data flags.

Beginning January 1996, DSI-3260 contains the archive of the original gage translation data. These data are in units of gage weight. The element is QGAG (counterpart of QPCP). The data quality flags are:

	FLAG 2 (Quality)
Q	Questionable value. Data not used.
P	Punch mechanism failure, missing punch assumed. Assumed punch value being used.
V	Evaporation likely. Gage value has dropped. Data are being used.

FLAG EXAMPLES

This precipitation accumulation occurs from 1st month, day 02 to 2nd month, day 04.

Month	**Day**	**Hour**	**Data Value**
01	0002	0500	000030bb
		1115	099999Ab (Accumulation begins)
		2500	000030Ib (Daily total incomplete)
02	0001	0100	099999Ab (Accumulation continues)
		2500	099999Ib (Daily total)
	0004	0845	000390Ab (3.90 inches)
		2500	000390Ib (Daily total incomplete)

This precipitation accumulation occurs for 1 month only.

01	0001	0015	099999Ab (Accumulation begins)
		2500	099999Ib (Daily total incomplete)
	0031	2400	000320Ab (3.20 inches)
		2500	000320Ib (Daily total incomplete)

This example includes several types of flags through month 01 and 02.

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01	0001	0015	000008bb	(.08 inches)
		1145	099999Ab	(Accumulation begins)
		2500	000008Ib	(Daily total incomplete)
02	0001	0015	099999Ab	(Accumulation continues)
		1430	000340Ab	(Accumulation ends)
		1545	099999Db	(Deleted period begins)
		2500	000340Ib	(Daily total incomplete)
02	0028	1330	099999Db	(Deleted period ended)
		1600	099999Mb	(Missing data)
		2300	099999Mb	(Missing data)
		2500	099999Ib	(Daily total incomplete)

This example represents no chart or data record were received at NCDC for month 01 and 02.

01	0001	0015	099999Mb	(Missing data)
		2500	099999Mb	
	0031	2400	099999Mb	
		2500	099999Mb	
02	0001	0015	099999Mb	
		2500	099999Mb	
	0028	2400	099999Mb	
		2500	099999Mb	

NOTE: blank = b

SAMPLE VARIABLE RECORD
(As seen from a tape dump)

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(column            1         2         3         4         5         6
 scale)    12345678901234567890123456789012345678901234567890123456789012345678901234567890

(data)     005815M17001100QPCPHI19810400060020400000012bb2500000012bb
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(The symbol 'b' denotes a blank)

DUMP POSITION	RECORD POSITION	CONTENTS	MEANING
1-4		0058	Record control word used by the operating system. (Contains the total number of characters in the record - not available to user programs.)
5-7	1-3	15M	RECORD-TYPE
8-15	4-11	17001100	STATION ID for state 17, station 0011.
16-19	12-15	QPCP	ELEMENT-TYPE
20-21	16-17	HI	ELEMENT-UNITS
22-25	18-21	1981	YEAR

:
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26-27	22-23	04	MONTH
28-31	24-27	0006	DAY OF THE MONTH
32-34	28-30	002	NUM-VALUES; Two data entries follow
35-38	31-34	0400	TIME-OF-VALUE (Precip from 3:45 to 4:00)
39-44	35-40	000012	DATA-VALUE FIRST DATA ENTRY
45	41	b	FLAG-1
46	42	b	FLAG-2
47-50	43-46	2500	TIME-OF-VALUE (daily total)
51-56	47-52	000012	DATA-VALUE SECOND DATA ENTRY
57	53	b	FLAG-1
58	54	b	FLAG-2

In this case, hours/mins 0015-0345 and 0415-0000 reported zero precipitation.

3. Start Date: 19710501

4. Stop Date: Ongoing

5. Coverage: Areal coverage includes the United States, Puerto Rico, Virgin Islands, and U.S. protectorates located in the Pacific.

14 Degrees 20 Minutes South Latitude (Malaeloa) to 65 Degrees 13 Minutes North Latitude (Mile 42 Steese, AK). 145 Degrees 15 Minutes East Longitude (Rota Airport) to 64 Degrees 47 Minutes East (Caneel Bay Plantation, VI).

6. How to Order Data:

Ask NCDC's Climate Services about the cost of obtaining this data set.
Phone: 828-271-4800
FAX: 828-271-4876
e-mail: NCDC.Orders@noaa.gov

7. Archiving Data Center:

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, NC 28801-5001

8. Technical Contact:

National Climatic Data Center
Federal Building

151 Patton Avenue
Asheville, NC 28801-5001
Phone: 828-271-4800

9. Known Uncorrected Problems: None. However, the data prior to January 1996 will have a blank followed 99999D to indicate a deleted time period. The data from January 1996 to current will have a delete denoted by 099999D.

10. Quality Statement: Data is interactively quality controlled at NCDC using spatiotemporal techniques in a variety of ways. Data before 1984 were converted from existing digital files (TD-9927) to the element structure format. These (historical) data were processed through a gross value check only. Beginning January 1984 the 15-minute precipitation data were processed through a completely revised system which produces the element structure data base file. This system was further enhanced beginning with the January 1996 data month. The new interactive quality control system introduced many added features. Data are subjected to new computer editing procedures reducing the manual handling of the data.

11. Essential Companion Datasets: None.

12. References:

National Weather Service Observing Handbook No. 2: Cooperative Station Observations, July 1989, U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service, Observing Systems Branch, Silver Spring, MD.